APPENDIX C
Accomplishments

OVERVIEW

As part of the 2000 KB Plan 11 water resource development recommendations with 30 subtasks were made and organized under seven different strategies. In addition, three water supply development recommendations were made. These recommendations were developed to either address unresolved issues, advance efforts in defining supply alternatives or make suggested changes in the District's regulatory rules. The 2000 KB Plan recommendations, although varied, were organized into one of four of the following general categories:

- Hydrologic investigations.
- Resource protection criteria refinements.
- Alternative supply development.
- Regulatory changes and inter-District coordination.

The recommendations had regional, as well as local responsibilities. Twenty-three of the 30 tasks listed under the 2000 KB Plan recommendations were initiated. The remaining seven tasks were not implemented due to lack of feasibility or delayed implementation of related projects.

The discussion of the implemented 2000 KB Plan recommendations is presented in the order in which they are presented in the Plan.

Implementation of 2000 KB Plan Recommendations

1.1 Develop a Reuse Master Plan

1.1.a Develop a Reuse Plan

Recommendation: The District will participate, along with local utilities, and other water management districts in the development of a regional wastewater reuse plan to optimize the use of reclaimed water to offset Floridan Aquifer drawdown and avoid potential harm to the resources. Components of this plan will address storage; supplemental sources; utility interconnects; institutional framework and interlocal agreements; local, District and Florida Department of Environmental Protection (FDEP) regulations; funding incentives; off-peak reclaimed water use and water conservation.

Progress: The District completed an inventory of existing and projected water reclamation facilities, to document existing and estimate future supplies of reclaimed water, and to examine future reclaimed water demands of the central Florida area in 2005. As part of this work, the District collected baseline information from each utility within Osceola and Orange counties and in portions of Polk and Lake counties. The data included existing and projected information on infrastructure, disposal methods and customer use. The data was then used to estimate the impacts of aquifer recharge and demand reduction on future water supply. Information on future land use planning was acquired to predict potential locations of new residential growth. This information was used to make predictions on wastewater generation amounts and to identify corridors for new reclaimed water reuse.

1.1.b Hydrologic Investigation of Recharge

Recommendation: The District will complete hydrologic investigations, in cooperation with local, state, and federal agencies, on the Surficial, Intermediate and Floridan aquifers in support of recharge optimization modeling. The focus of these studies should be on Orange, Osceola, and Polk counties and in areas where the risk of harm to the resources is estimated to be the greatest.

Progress: Starting in FY 2001 the District began a program of installing and monitoring “paired” well sites. The focus of these efforts was in Orange and Osceola counties, but also included developing sites in Polk and Okeechobee counties.

From 2002 to 2005, the SFWMD invested nearly $1.1 million to place a paired shallow and Floridan Aquifer wells at 32 sites. Each station contains continuous water level recorders monitored by the District. Each site contained, at a minimum, one well in the Surficial Aquifer and one well in the Floridan Aquifer. Several sites included a nested well set that also monitored the intermediate confining units and the Lower Floridan Aquifer.

In addition, the District initiated a contract for the construction and testing of six upper and lower Floridan Aquifer wells. Along with the U.S. Geologic Survey, the District hired a vendor to conduct hydrologic studies of Orange and Polk counties and entered into an agreement to monitor monthly water levels of 16 additional Floridan Aquifer wells. This information was used to update previous modeling efforts.

1.1.c Reclaimed Water Injection Pilot

Recommendation: The District should, in conjunction with a local government, evaluate the benefits of deep aquifer injection of treated reclaimed water as a means of addressing water storage problems.

A deep injection aquifer recharge pilot study is proposed, in partnership with a local sponsor, to investigate the feasibility of injecting treated reclaimed water into the Floridan Aquifer as a form of aquifer recharge.

Progress: In FY 2002, the District contracted a vendor to conduct a feasibility assessment of an indirect potable reuse project for central Florida. The study focused on the injection of potable quality reclaimed water into the freshwater portions of the Floridan Aquifer System. The feasibility portion of the study, completed in May 2002, demonstrated development and operational costs similar to that of other water supply alternatives. As part of this work, a pilot-testing program was developed. Efforts to begin pilot testing with an exploratory well were postponed due to lack of local support.

1.2 Storm Water Reuse Plan

1.2.a Evaluate Stormwater Systems

Recommendation: Evaluate the regional stormwater drainage systems to determine if water is available to augment wastewater reuse systems or to be used for local irrigation. Components of this plan will address storm water routing, water quality, collection of water to supplement reclaimed water systems and the use of drainage wells to enhance aquifer recharge.

Progress: A study of two tributaries and two lakes, which are part of the Kissimmee Chain of Lakes, was completed in 2005. Evaluations of the

Lake Tohopekaliga, East Lake Tohopekaliga and its tributaries, Boggy and Shingle creeks were conducted to determine the availability of water supplies from these sources.

The study, completed in 2005 suggests that significant volumes of water might be withdrawn from the Kissimmee Chain of Lakes, while causing limited changes to the identified environmental criteria. The findings also show this source is drought prone and that development of storage is likely an important component of source reliability. **Appendix I** provides the Executive Summary of these studies and links to the full report.

1.2.b Artificial Recharge Project

Recommendation: Continue participation in the Artificial Recharge Demonstration Project to evaluate the regulatory, water quality and recharge aspects of drainage wells by participating in demonstration projects. This is a cooperative effort between the SFWMD, the St. Johns River Water Management District (SJRWMD), Orange County, the City of Orlando and other local governments.

Progress: In 2002 and 2003, the District participated with the SJRWMD in their Artificial Recharge Project investigating at passive treatment options for lake and street drainage wells, and methods for maximizing recharge through infiltration basins.

The SJRWMD has made progress in monitoring the reduction of chemical and biological contaminate concentrations of injected stormwater drainage wells. The Central Florida Aquifer Recharge Enhancement project has identified areas most likely to offset potential impacts through recharge. These areas include the ridge areas of western Orange and Osceola Counties.

1.2.c Drainage Well Treatment Pilot

Recommendation: The District should, in conjunction with local and state governmental agencies, evaluate the benefits of alternative treatment methods for storm water entering drainage wells. The quality of water entering existing and proposed drainage wells is of critical concern. Water entering new or modified drainage wells must meet primary and secondary drinking water standards. Proposed is a demonstration project in conjunction with Orange County Utilities to identify drainage wells receiving the worst quality water and to devise cost-effective treatment to meet the Florida Department of Environmental Protection (FDEP) and U.S. Environmental Protection Agency (USEPA) water quality requirements for injection.

Progress: In FY 2002, the District, in conjunction with the SJRWMD and Orange County Utilities, contracted with a local consulting firm to complete an inventory of drainage wells located in Orange, Seminole, Lake and Osceola counties.

The purpose of this study was to create a GIS-based inventory and database of information on central Florida drainage wells, identify potential sites for pilot testing, develop a single digital source of information of all known wells and provide a preliminary design of a treatment system option for the full treatment of storm water prior to entry into area wells. The study was completed in February 2003.

In 2004 and 2005, the Nashville Street drainage well was selected as the site for testing a combined storage area and storm-scepter™ concept to improve water quality. The construction, done in conjunction with Orange County, was completed in 2005. Water quality sampling is ongoing by the County.

2.1.a Comprehensive Conservation Program

Recommendation: The District should appoint two water conservation coordinators who would be responsible for developing a comprehensive water conservation program for the District. The program will be designed to coordinate local government and water management district efforts in water conservation education.

Progress: In 2002, the District created a new section within the Water Supply Department to address water conservation initiatives. This new section manages the Alternative Water Supply (AWS) Funding Program, Mobile Irrigation Labs (MILs), Water Savings Incentive Program (WaterSip) and conservation outreach programs.

The AWS Funding Program was opened to the Kissimmee Basin Planning Area in 2003. Since then, over 2 million dollars in projects funding support has been spent for AWS. The District's Water Savings Incentive Program (WaterSip) is a program to fund local conservation initiatives such as weather station irrigation controllers, toilet retrofit and outreach programs.

In addition, District staff is actively involved in the Florida Water Conservation Initiative led by the Florida Department of Environmental Protection. The SFMWD continues to participate on the Statewide Reuse Coordinating Committee to discuss statewide reuse issues.

2.1.b Individual Conservation Plans

Recommendation: The District will encourage and assist in the development of effective water conservation plans for individual public water supply utilities.

Progress: Staff has worked with utilities to identify opportunities for water conservation through both the conservation section and water use regulation division of the District. Tracking of individual public water supply utility water conservation plans has not occurred.

3.1 Evaluate Alternate Supplies

3.1.a. Surface Water Availability

Recommendation: For the following surface water bodies, the District should conduct a comprehensive research project to:

1. Determine the amount of water available for allocation without causing harm.
2. Determine appropriate minimum flows and levels.
3. Recommend integration of these minimum flows and levels with the water shortage program.
4. Propose a quantity of water in the Kissimmee River which should be reserved from use under Section 373.223(3), F.S.

Each of the research project's recommendations should be implemented after incorporating the same in District rules.

The following water bodies should be the subject of this comprehensive research project: Kissimmee River and Lake Kissimmee in 2004 and by 2006 for East Lake Tohopekaliga, Lake Tohopekaliga, Lake Hatchineha, Cypress Lake, Fish Lake, Lake Jackson, Lake Marian, Lake Pierce, and Lake Rosalie.

Progress: An evaluation of the Lake Tohopekaliga, East Lake Tohopekaliga and its tributaries, Boggy Creek and Shingle Creek was completed to determine water availability for supplies. The study, completed in 2004 suggests that significant volumes of water might be withdrawn from the Kissimmee Chain of Lakes, while causing limited changes to the identified environmental criteria. The findings also show this source is drought prone and that development of storage is likely an important component of source reliability. Boggy and Shingle creeks are slightly more reliable sources potentially yielding and average of 4 and 6 MGD respectively.

Beginning in 2003, the District entered into an agreement with the City of Kissimmee to construct facilities to withdrawal up to 4 MGD from Shingle Creek for use in reuse augmentation and groundwater recharge. The District also sponsored this project in 2004, 2005 and 2006. The project is projected to be complete and on-line in the fall of 2006.

Each year the District updates the list of priority water bodies for the establishment of Minimum Flows and Levels (MFLs). In December 2005, the District adopted a MFL for Lake Istokpoga. The most recent MFLs priority list postponed the setting of MFLs for the Kissimmee River, Lake Kissimmee, Cypress Lake, Lake Rosalie, Lake Marian, Lake Jackson and Lake Hatchineha to beyond 2010.

Setting a minimum level for the Floridan Aquifer in central Florida was postponed indefinitely to allow for the gathering of additional information to specify such an MFL.

3.1.b Coordinate with SJRWMD on St. Johns River

Recommendation: The District should coordinate with the SJRWMD on the investigation of the St. Johns River as a water supply option for the Central Florida area.

Progress: The District has coordinated efforts with the SJRWMD on investigation of the St. Johns River at the State Road 50 crossing, the development of supplies from the Taylor Creek Reservoir and efforts to investigate the Kissimmee Chain of Lakes. In addition, the SFWMD has participated in meetings regarding the related concentrate disposal study being conducted, and reviewed reports generated by consultants hired by the SJRWMD.

3.2 Optimize Use of Floridan Aquifer

3.2.a Hydrologic Investigations

Recommendation: The District, in partnership with local governments and state and federal agencies will complete hydrologic investigations of the aquifer systems within the basin in support of the development of new or revised groundwater modeling tools. Focus of these studies should be on Orange, Osceola and Polk counties and in areas where the risk of harm to the resources is estimated to be the greatest.

Progress: From FY 2000 to FY 2006 the District budgeted over $3 million dollars for the construction and testing of a series of wells designed to obtain new information on the Floridan Aquifer System in central Florida, particularly the lower portion of the aquifer.

Thirteen wells were constructed and tested in the Floridan Aquifer. Six of the wells were constructed into the Lower Floridan Aquifer. These sites were constructed in cooperation with the Reedy Creek Improvement District, Orange County, Orlando Utilities Commission and the SJRWMD.

3.2.b Groundwater Modeling

Recommendation: New or revised groundwater models should be developed to make better predictions for the next planning cycle. These models should be developed in cooperation with the USGS, local governments, and other water management districts.

Progress: In 2002, the SJRWMD and SFWMD reached an agreement to use the previously developed East Central Florida (ECF) groundwater model as the basis for future water use simulations for Orange, Osceola, Polk, Lake and Seminole counties. A modeling plan for updating the ECF model was cooperatively developed between the two Districts with SFWMD taking the initial lead in converting the model to simulate transient conditions. Work has continued through 2006 with the completion of the first calibrated transient model for central Florida.

4.1 Develop Backpumping Plan for Indian Prairie Basin

4.1.a-e Southern Indian Prairie Basin Operation Plan

Recommendation: Recommendations (a-e) are all related to developing operation plans for pumps G-207, G-208 and for a possible new pump at Structure G-84.

Progress: During 2003, the District began work on the development of a Southern Indian Prairie Operation Plan (SIPOP) with the purpose of identifying the operational conditions for District pumps G-207 and G-208 that move water from Lake Okeechobee to the lower Indian Prairie Basin. Work on the SIPOP was halted in 2005 to allow for the completion of a new surface water model covering Lake Istokpoga and to account for the MFL being proposed for the lake. In 2005, the District's effort to make improvements in surface water run-off to Lake Okeechobee included a review of the current Lake Istokpoga regulation schedule.

Under the current draft of the SIPOP, the District chose not to pursue the design of pumps for location at structures S-82, S-83 and S-84. After an initial evaluation of the pump installation and operational costs, it was determined that installation of pumps for the sole purpose of water supply was not feasible.

4.2 Kissimmee River Water Availability

4.2.a Availability of Water from the Kissimmee River

Recommendation: The District should conduct a comprehensive research project to determine water reservations for the Kissimmee River, determine the amount of water available from the river for allocation without causing harm, and establish a MFL for the river.

Progress: The District is currently developing a Long Term Management Plan for the lakes in the Kissimmee Basin Upper Chain of Lakes. This plan and its adoption is expected to be completed in 2008. The key components of the plan are establishing the volume and timing of water releases from the Kissimmee Chain of Lakes to the river. As part of this evaluation, the availability of water for consumptive uses is being evaluated.

4.2.b. Kissimmee River Reservation of Water

Recommendation: Propose a quantity of water in the Kissimmee River that should be reserved from use under Section 373.223(3), F.S.

Progress: The reservation of water for the Kissimmee River has been indefinitely postponed.

5.1 Lake Istokpoga Management Plan

5.1.a Revise Operation Plan for Istokpoga

Recommendation: The District should work with the U.S. Army Corp of Engineers in revising the operational plan for Lake Istokpoga and the Indian Prairie system. This work is proposed to be conducted as part of the Comprehensive Everglades Restoration Plan (CERP).

Progress: The District began work on the Lake Istokpoga Management Plan in 2003; however, any management plan developed for the Lake requires consideration of the possible revisions to the regulation schedule, potential new releases through the S-67 replacement structure on the Istokpoga canal, and the minimum levels being researched for the lake. While the MFL for the lake has been resolved, the revised regulation schedule for the lake and construction and use of the S-67 structure are unresolved in 2006. The District has postponed further work on the Lake Istokpoga Management Plan until such time these issues are resolved.

Beyond the development of the management plan, the District was tasked to install new monitoring gauges on Lake Istokpoga. In 2005, the District installed two new monitoring stations in the lake and integrated these

stations into the remote monitoring network to provide data needed for operational decision-making of Structure S-68.

5.1.b Evaluate Minimum Canal Flows

Recommendation: The District should evaluate the need for the minimum operation flow requirements under Chapter 40E-22, F.A.C. and modify them accordingly.

Depending on the results of the evaluation, the District should initiate rulemaking efforts to modify Chapter 40E-22, F.A.C., to incorporate the revised flows.

Progress: A review of the minimum flow requirements as set forth in 40E-22, F.A.C. indicates that the flows were established as a means to maintain the historic run-off from the Indian Prairie Basin to Lake Okeechobee.

Records show that these flows are generally met in drought years no greater than a 1-in-10 year condition. In the drier years, the canal flows are usually met in the summer, but less often in the winter months or during periods of drought recovery. The Southern Indian Prairie Basin Operational Plan will address the proposed changes to the minimum operational flow conditions when completed.

5.1.c Complete MFL Technical Work for Lake Istokpoga

Recommendation: The District should complete the technical work on establishing a MFL for Lake Istokpoga no later than 2003.

Progress: The SFWMD initially targeted 2004 for the adoption of an MFL on Lake Istokpoga. In December 2005, the District adopted a MFL for Lake Istokpoga.

5.2 Evaluate Regional Storage (near Lake Istokpoga)

5.2.a Lake Istokpoga ASR

Recommendation: Enter into an agreement with Southwest Florida Water Management District (SWFWMD) to conduct a feasibility assessment on an Aquifer Storage and Recovery (ASR) type facility on or near Lake Istokpoga.

The District should work with the SWFWMD to assess the potential for inter-district transfers of water.

Progress: After initially identifying the possible application of ASR at Lake Istokpoga, the SWFWMD chose not to pursue this water supply option. The SWFWMD will pursue other solutions.

Since that time, however, the issue of inter-district transfers has become an important issue to address due to the proposal of multiple wellfields within the KB Planning Area to serve demands within the SWFWMD. Coordination among the districts is key in these cases as impacts from the source potentially extend into both Districts.

This project proposes to evaluate the feasibility of the surface water ASR technology by implementing pilot testing and water quality evaluations. Results of these efforts will be directly applicable to the possible future application of ASR to Lake Istokpoga and the Indian Prairie Basin.

5.2.b North of Lake Okeechobee Reservoir

Recommendation: The District will review the potential for placing the regional storage reservoir, identified in the Central and Southern Florida Flood Control Project Restudy to be located north of Lake Okeechobee, in a location that may assist in supplying water to the Indian Prairie Basin. The timing of this review will be coordinated with the implementation of the CERP effort.

Progress: As part of the CERP Lake Okeechobee Watershed (LOW) Project, and the Lake Okeechobee Estuary Recovery Program (LOER), the District is investigating several locations for the construction of a reservoir facility. At the time of this report, several sites had been short-listed as possible locations for the Indian Prairie Basin and adjacent areas north of Lake Okeechobee. The identification of a reservoir site is in progress. This reservoir, when complete, may supply water to the Indian Prairie Basin.

6.1 Related Implementation Strategies

6.1.a Inter-district Coordination

Recommendation: The SFWMD will coordinate with the SJRWMD, SWFWMD and the FDEP for the purpose of developing consistent criteria and maximizing approaches towards the following:

- Resource protection criteria.
- Hydrologic investigations.
- Local sources first.
- Minimum flows and levels.
- Water shortage declarations.

Progress: The three water management districts of central Florida participate in several cooperative efforts. Among these efforts are:

1) The Water Planning Coordination Group, which includes members of the State of Florida's five water management districts and the FDEP. Its purpose is to develop consistency in water planning.

2) The Inter-district Framework Group, which looks at consistency in the determination of MFLs.

3) The Inter-District Irrigation Water Use Working Group, which develops consistent methods for determining agricultural water use projections.

The SFWMD and SWFWMD participated in a public process known as the East Central Florida Water Initiative during 2002–2003. This effort brought together local elected officials and the general public to discuss water supply issues facing Central Florida.

The SFWMD, SJRWMD, SWFMWD and FDEP continue to meet regularly under a Memorandum of Understanding (MOU), which addresses water supply planning, hydrologic investigations, water shortage declarations and water use permitting.

During the 2000–2001 drought, the SFWMD and SJRWMD coordinated water shortage declarations for Orange County to provide a consistent message to the public. Water shortage declarations in both Districts were removed in 2006.

7.0 Consistency between Planning and Water Use Permitting

7.0.a-b Continue Rulemaking Efforts and 20-Year Permits

Recommendation: Continue ongoing rule development, rulemaking and consideration of granting 20-year permits for currently demonstrated non-harmful uses.

Progress: In August 2003, the Governing Board adopted the "B" list revisions to the water use rules. The rules became effective in September 2003.

Nearly two dozen revisions to the rules were made. These included permit duration, wetland criteria, groundwater model evaluations, use of reclaimed water, supplemental irrigation requirements, aquifer storage and recovery, wellfield operation plans, pasture irrigation and use of local sources.

7.0.c Lift Moratorium For Lake Istokpoga

Recommendation: The District should consider lifting the moratorium identified in 3.2.1(A) of the Basis of Review for Water Use Permitting for the Lake Istokpoga-Indian Prairie system after addressing the issues discussed in Recommendation 4.1.

Progress: Lifting the moratorium on new surface water uses from Lake Istokpoga is dependant on the development of a Southern Indian Prairie Basin Operational Plan. The review of source availability from Lake Istokpoga shows that while additional water may be released from the lake without causing harm, the amount of water is limited and the agricultural area is still prone to drought, requiring identification of dependable backup sources. Possible changes to the Lake Okeechobee operational schedule prompts the uncertainty of the availability of these backup sources and the need to identify new alternatives. The development of the SIPOP is on hold until the issues regarding these backup sources are resolved. Until this plan is complete, the lifting of the moratorium identified in 3.2.1(A) will be postponed.

7.0.d Resource Protection Criteria Rulemaking

Recommendation: The District should continue the research and rulemaking efforts directed towards the development and adoption of wetlands resource protection criteria.

Progress: The Water Use Wetland Protection Rule was adopted during the August 2003 SFWMD Governing Board meeting. This rule establishes criteria for the protection of wetlands from drawdown associated with water withdrawals. The rule identifies three categories of wetlands. Two of these categories have narrative standards while the third has a numerical limitation of 1.0 feet.

7.0.e Sinkhole Investigation

Recommendation: The District should complete a hydrogeologic investigation to further refine the relationship between water levels, geologic conditions and the formation of sinkholes. Results from this and existing studies will be the basis for future rulemaking efforts on sinkholes.

Progress: In 2001, the SFWMD entered into an agreement with the SJRWMD to evaluate the relationship between sinkholes and Floridan Aquifer levels.

Phase I of the project was to update the older sinkhole database and to establish a statistical relationship between the development of sinkholes

and aquifer levels. The study was completed in 2002 and led to the development of a GIS-based inventory.

The updated database includes approximately 570 documented sinkhole occurrences in central Florida from 1954 to 2001. These updates improved the accuracy of the calculations for determining statistical correlations between sinkhole occurrence and Floridan Aquifer levels, but they provided only limited insight for improving the current sinkhole criteria.